

REMARKS

Favorable reconsideration of the application is respectfully requested in light of the amendments and remarks herein.

Upon entry of this amendment, claims 1-2, 5-6, and 8-13 will be pending. By this amendment, claims 3-4 have been canceled; and claims 1, 8-10, and 13 have been amended. No new matter has been added.

§ 102 Rejection of Claims 1-6, 8-10, and 13

In Section 3 of the Office Action, claims 1-6, 8-10, and 13 stand rejected under 35 U.S.C. §102(b) as being anticipated by Gotoh *et al.* (U.S. Patent No. 6,052,465; hereinafter referred to as “Gotoh”). Claims 1, 8-10 and 13 have been amended to address the rejection.

In the Background of the Specification, it was indicated that “[w]hen the data recorded in the BCA 2 is to be reproduced, a reproducing apparatus generates a clock on the basis of a reproduced signal of the BCA-Preamble part by means of a PLL (Phase Locked Loop), and performs demodulation and error correction by a predetermined method on the basis of the clock to thereby reproduce the data. … However, if the PLL loses synchronism in reproducing the data recorded in the BCA due to some defect, for example, the data cannot be reproduced until the PLL regains synchronism. This means that reproduced data is lost for a period when the synchronism of the PLL is lost. … Also, if a synchronization signal (sync) is lost once due to a defect or the like, data may be lost until a next synchronization signal is detected.” *Background of the Specification, page 2, line 21 to page 3, line 12.*

“Therefore, high reliability is required for data recording and reproduction recorded in the BCA2. In order to reduce the amount of lost data, a method of frequently inserting a

synchronization signal for resynchronization is conceivable; however, such insertion of the redundant synchronization signal reduces the amount of data recordable in the BCA.”

Background of the Specification, page 3, line 20 to page 4, line 2.

To address the above-described problems of a conventional data structure of data recorded in the BCA of a recording medium, embodiments of the present invention provide apparatus, methods, and recording media for recording and playing back data on a recording medium. In particular, the recording medium of claim 1 includes an area for recording auxiliary information, wherein each frame includes a synchronization signal whose pattern is formed by arranging marks or spaces in three or more contiguous channel bits, and wherein the auxiliary information is modulated by a 4-1 modulation method that modulates two data bits into seven channel bits.

For example, the configuration of recording medium claim 1, as presented herein, includes:

“*n blocks*, each block of said n blocks obtained by dividing said second area into n equal parts in a circumferential direction; and

m frames, each frame of said m frames obtained by dividing said each block into m equal parts in the circumferential direction,

wherein said auxiliary information is arranged in said frames in such a manner as to be at equal intervals in the circumferential direction, and

wherein said each frame includes a synchronization signal whose pattern is formed by arranging marks or spaces in three or more contiguous channel bits, such that said synchronization signal provides synchronism necessary for a playback apparatus to read said auxiliary information recorded in said second area,

wherein said auxiliary information is modulated by a 4-1 modulation method that modulates two data bits into seven channel bits.”

(emphasis added)

Accordingly, in one aspect of claim 1, the recording medium includes an area for recording auxiliary information, wherein each frame includes a synchronization signal whose pattern is formed by arranging marks or spaces in three or more contiguous channel bits, such that the synchronization signal provides synchronism necessary for a playback apparatus to read the recorded auxiliary information, and wherein the auxiliary information is modulated by a 4-1 modulation method that modulates two data bits into seven channel bits. In the 4-1 modulation method, a ratio of logical "0s" to logical "1s" is 5:2 so that the amount of reflected light is larger than when the auxiliary information (i.e., disk ID information) is recorded by the phase encoding (PE) modulation method. Thus, the 4-1 modulation has an advantage of making it easier to effect servo control such as focus control during the reading of data. See *Specification, page 32, lines 15-21.*

By contrast, although Gotoh discloses recording bar code information in a prescribed region of a pre-pit area, Gotoh fails to teach or suggest providing an area for recording auxiliary information, wherein each frame includes a synchronization signal whose pattern is formed by arranging marks or spaces in three or more contiguous channel bits, such that the synchronization signal provides synchronism necessary for a playback apparatus to read the recorded auxiliary information, and wherein the auxiliary information is modulated by a 4-1 modulation method that modulates two data bits into seven channel bits.

Based on the foregoing discussion, it is submitted that Gotoh fails to teach or suggest all the limitations of claim 1. Therefore, claim 1 should be allowable over Gotoh. Since independent claims 8-10 and 13 closely parallel, and include substantially similar limitations as, independent claim 1, claims 8-10 and 13 should also be allowable over Gotoh. Further, since

claims 2 and 5-6 depend from claim 1, claims 2 and 5-6 should be allowable over Gotoh. Claims 3 and 4 have been canceled.

Accordingly, it is submitted that the rejection of claims 1-6, 8-10, and 13 based upon 35 U.S.C. §102(b) has been overcome by the present remarks and withdrawal thereof is respectfully requested.

§ 103 Rejection of Claims 11 and 12

In Section 10 of the Office Action, claims 11 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Gotoh in view of Horiguchi (U.S. Patent No. 5,380,996).

Based on the foregoing discussion regarding claim 10, and since claims 11 and 12 depend from claim 10, claims 11 and 12 should be allowable over Gotoh. Horiguchi was cited for disclosing using majority rule for error correction. Therefore, Gotoh and Horiguchi, individually and in combination, fail to teach or suggest all the limitations of claims 11 and 12.

Accordingly, it is submitted that the rejection of claims 11 and 12 based upon 35 U.S.C. §103(a) has been overcome by the present remarks and withdrawal thereof is respectfully requested.

Conclusion

In view of the foregoing, entry of this amendment, and the allowance of this application with claims 1-2, 5-6, and 8-13 are respectfully solicited.

In regard to the claims amended herein and throughout the prosecution of this application, it is submitted that these claims, as originally presented, are patentably distinct over

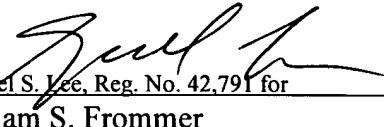
the prior art of record, and that these claims were in full compliance with the requirements of 35 U.S.C. §112. Changes that have been made to these claims were not made for the purpose of patentability within the meaning of 35 U.S.C. §§101, 102, 103 or 112. Rather, these changes were made simply for clarification and to round out the scope of protection to which Applicant is entitled.

In the event that additional cooperation in this case may be helpful to complete its prosecution, the Examiner is cordially invited to contact Applicant's representative at the telephone number written below.

The Commissioner is hereby authorized to charge any insufficient fees or credit any overpayment associated with the above-identified application to Deposit Account 50-0320.

Respectfully submitted,

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